



# The Use of Virtual Reality Technology in Higher Education as a Method and Means of Teaching

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## ABSTRACT

In work the experimental training programs created in the present virtual reality are submitted, their influence on thinking and psychological conditions of the person is tracked. The virtual reality is considered as special the information environment in which all objects are submitted in 3-D measurements, there is a wide animation, change of images at a mode of real time and experience of effect of presence. Thus interpretation of a virtual reality as method, means and technology of training is proved.

## Keywords:

Virtual reality, virtual reality curricula, thinking, creativity, teaching methods and tools.

**Introduction.** In pedagogy and psychology, especially didactics and educational influences there is very little real research on virtual reality regarding the practice. Of course, this one of the main reasons for this research is not only in our country, but also abroad both are Complexity, High material costs. A.E. Voiskunsky virtualemphasizing the need to expand the zones of use of reality (VR), it is he wrote: "in the face of learning psychology or educational psychology, big volume tasks are standing. Methods for organizing training at the moment, including professional and group training only in a virtual environment being studied ... "[1].

**Literature analysis.** Virtual helmet by Ivan Sutherland in 1966 since the invention of the prototype (video recording), its "fantastic" or virtual ideas for creating worlds, in programming by Jaron Lanier in 1989 the application of the term "virtual Reality" (VR), this concept has many meanings having: from working on the Internet to complex technical devices - virtual reality helmets, rooms, sensors, trackers, gyroscopes, servo suits and others up to creating an immersive 3-D information environment with the help of. VR in pedagogy

basically, the student can receive certain information, establish contacts, scientific, educational and a special information space that can set elements of project activities applied as. For example, scientific works, articles, creative materials, photo and video materials, Memoirs of scientists from different historical periods, modern interesting is the experience of creating information interactive resources, a virtual museum-library it would seem [2].

The creation of such information resources (such as "databases") with elements of interactivity is an important area of modern education, which allows students to model the ideas and scientific directions of scientists allows you to master.

## Virtual reality content

The essence of Virtual reality is understood in a more traditional cybernetic (programmatic) sense [3] corresponding to the idea . The essence of VR is reduced to the following main characters: 1) creating three-dimensional images of objects as close as possible to reality, by programming models of real objects similar to holograms; 2) the possibility of animation (the fact that a subject

in virtual space moves, looks at an object from different angles, "flies" in the universe, "moves" inside a biological cell, etc.); 3) processing of network information, which is carried out in real time (actions of the subject, for example, his actions, changes in the tilt of the head, changes in the image of the object, etc.); 4) creating the effect of existence by programming (feeling the illusion of a person with objects and / or subjects in an artificially created Information reality). In general, virtual reality is a technology of interaction between a person and a machine that ensures the user's access to a three-dimensional interactive information environment. It should be noted that these objects of the environment are not just high-quality observed three-dimensional images (scenes), they are similar to real objects and have certain characteristics that appear when interacting with other virtual objects. For example, you can specify the density of the material and other characteristics, so if you throw a virtual ball into virtual water, it will float ...

VR is a special, separate, informational reality created to emulate ordinary reality. Depending on the goals of the researcher, the corresponding characteristics are introduced into the virtual environment, which determines the degree of saturation of VR in advance, but, of course, it does not completely repeat the parameters of the objective world (for this, the mental object of the person also belongs).

Can VR be used in pedagogy, specifically in didactics? The available publications have a general appearance, a theoretical character, in which, when teaching, the possibility of using VR technologies is recognized as expedient. This position is legal, although it requires some comments. Comments:

1. VR technologies currently used in education are also more environmentally friendly than traditionally used multimedia tools. For example, in the Z 800 helmet, two monitors brought directly into the eyes are made of oled material, which does not emit any particles (except for light photons), in which the image is created by changing the crystal lattice of the screen (even in liquid crystal computer

monitors, although insignificant, there is radiation).

2. It is customary to treat VR with caution, since it is determined by a special world that "takes away" the subject from real reality, forms virtual dependence, etc.

Being in the VR does not cause an imbalance of thinking, does not reduce the level of reflexes, "alienation of one's own self", "exit from the body", "separation of body and soul" does not lead to loss of arbitrariness and purposefulness of activity. These and other features of VR indicate its advantages (in relation to the traditional, desktop-printed presentation of educational content), the possibility of its application from primary school age in teaching, professional development and other areas.

### **Virtual reality as a method of pedagogy and psychology**

The problem arises: what category of didactics and education does such virtual reality belong to? Perhaps VR in teaching is, first of all, the methods and means of teaching.

As you know, in its general form, a method is a way of achieving a goal, solving a specific problem, or rather, a set of methods or operations for practical or theoretical assimilation (perception) of reality [9]. We will not discuss the relationship between the method and methodology of science, pedagogy, but will focus on the more practical meaning of the concept of Method, its relationship with such components of modern didactics as teaching tools, form, types.

In most definitions of teaching methods, it is noted that this category includes the activities of both the teacher and the student: "the method of Education is a system of sequential interconnected actions of the teacher and the student, which ensures the assimilation of the content of Education" [10]. I.Y. Lerner, M.N. Skatkin distinguishes three types of signs of educational methods: setting the goal of training, reflecting the method of mastering and expressing the nature of the interaction of the subjects of study. Most teachers talk about the teaching method as a way of giving, mastering knowledge, which is closely related to the

actions of the subjects of the educational process, methods and means of teaching. The method is often understood as a set of coordinated, generalized teaching methods as a logical way of mastering knowledge, performing a learning task, acquiring skills, a specific method of joint interdependent activity of teachers and students. Mastered knowledge, especially new ones, exists only, they are complex, abstract, intuitive ... The task of didactics is to change such knowledge, to make it accessible, understandable to the reader. The teaching method is closely related to the student's understanding of scientific knowledge or the method of action, which is designed to provide this understanding. How is understanding achieved? By changing the knowledge itself or the content of Education. Thus, the teaching method is closely related to the content of Education. The content of education is produced by the teacher, through which he transfers the data system to the student.

In our opinion, modern media for the presentation of educational material are so original and developed that they reveal qualitatively new features of the content of education that are not available in traditional methods.

For example, the same VR radically changes the principle of visibility, creating the similarity of real objects by modeling information. As a result, the reader receives almost the same (or stronger) personal experience as visual, auditory, tactile, sense of smell, when performing actions, as in real interaction with similar situations. In this aspect, we are talking about the American didactic K. Close to Kerning's position, he distinguished four revolutions in the field of teaching methodology: 1) replacement of parents-teachers with professional teachers; 2) replacing the Spoken Word with a written word; 3) introduction to the teaching of the printed word; 4) introduction of automation and computerization of teaching. These revolutions reflect not only a change in the means of teaching, but also a change in the quality of educational material, the content of Education. Virtual being is one of the peaks of

computerized education. He achieves "overexcitation" of human sensory organs. In addition, the following are radically changing: the interaction of the teacher and the student, the content of Education (which becomes information), the actions of the teacher and the student, the method of mastering the material.

So when it comes to VR, most of the main features of the teaching method are specific. This allows us to talk about VR methods as teaching methods. These methods are also carried out in a new type of teaching (perhaps this should be noted) - conditionally it can be called software-informational.

Today, the specificity of human interaction with information models of reality is clear. Through the use of Information Systems, the subjectivity of both the teacher and the student in teaching increases sharply, the boundaries of visibility and openness, the implementation of the principles of inclusive education, the connection between education and life, the potential for emotional abilities, the influence on the student are expanding. These and other features of VR methods and software-informational training allow us to talk about them as dominant in the implementation of science pedagogy.

### **Virtual reality as a means and technology of teaching**

VR, in our opinion, also applies to training weapons. In the classical sense, school supplies are didactic means of teacher and student activity, educational equipment, visual aids. These tools are information carriers that carry out educational purposes. In this regard, VR refers to rather complex technical devices, special equipment, therefore, devices for the implementation of VR are perceived as a tool. Unfortunately, so far there are few training programs in a real virtual environment. For this reason, virtual existence has not yet become a means of teaching.

Currently, in pedagogy, especially in the theory of upbringing, a rather original approach, in which the means of upbringing are interpreted in a broad sense. For example, Labor (as an activity) can be perceived as a means of personality formation. This happens

when labor activity is used not for the production of consumer goods, but primarily as a means of upbringing, influence on the individual. In this approach, the means of education (training, respectively) are different types of activities (play, study, work, communication), outside of which it is impossible to form certain personal qualities of the student, they are the subject of Education. So, the tool is not the material object itself, which is used in the educational process, but the activity of the reader, which includes this object.

The nature of the reader's activity with this or that object ("tool") gives him certain experiences, emotions and relationships. These experiences and relationships are generalized and become the basis of character traits, will, personal and subjective qualities. It turns out that the student's activity is a different, more general activity - a means of teaching and upbringing.

With understanding the learning tool, VR also refers to learning tools. Work in VR can be considered as a specific type of activity, the subject of which is information or information models of real situations. Perhaps the greatest didactic effects are achieved with the help of the most complex equipment. These are VR rooms-CAVE, consisting of several screens arranged in a cube, on which images are projected, the student enters the room wearing special glasses and sees nothing but virtual objects surrounding it, which creates the effect of the maximum presence of virtual objects.

The interpretation of VR as an activity that implements didactic goals also implies training programs for creating avatars - data models of the human body or its parts in VR, with the help of which it identifies itself and can control them. In teaching, this is still used inefficiently, for example, in distance education, an environment is created, such as lecture halls for collaborative communication, where each student has his own avatar, from which he can be asked to carry out commands - raise his hand and answer a question, climb a board or nod. Such training VR systems still look simple.

Thus, on the one hand, it is advisable to classify the various types of activities (play, educational, labor, etc.) into teaching tools, and

on the other hand, a set of objects and works involved in material and spiritual culture.

VR, which is used for pedagogical purposes, is also an educational technology. Educational technology is a system, sequence of actions aimed at the implementation of the goals and objectives of educational concepts.

The actions within the educational programs that we have created in the real VR have a strictly defined sequence, are aimed at mastering the content of education and are guaranteed to bring tangible results. However, VR training programs have not yet been fully transformed into technology. If we take into account all the main criteria of educational technologies: consistency, reproducibility and guarantee of the result, the presence of feedback, then the latest features have not yet been implemented in didactic VR systems. In particular, there is a lack of a control algorithm. However, this drawback is quite easy to eliminate, and in VR it can be implemented at the highest instrumental level.

### **The influence of didactic programs on the thinking and mental state of a person in real virtual reality**

VR images have a significant impact on creativity and stimulate the procedural features of thinking when content is introduced as a component of a task. There are direct and indirect forms of interaction between the imaginary and cognitive spheres of intelligence, in the interaction of which intermediary thought processes are analysis, synthesis and generalization.

Recently, a number of educational programs have been created in the Russian Federation for high school students in a real virtual environment in biology and geometry. In these applications, VR images have become much more dynamic, the ability to animate has expanded significantly.

All objects in these manuals are in 3D format and are animated using Unity, a multi-platform 3D application development tool.

Two very difficult "protein synthesis" and "Gene heredity" topics from biology for high school students were conducted through VR. Readers have the opportunity to zoom in and

out of objects during the movement, stop the scene, receive well-founded comments about the biological processes taking place on the screen, etc. They could fully penetrate and influence the processes that take place inside the cell in the process of protein synthesis and the heredity of signs. Viewing such a software product takes 8-15 minutes.

### Summary

As a method and means of teaching, the following general rules can be formulated on the specificity of virtual reality.

1. The training programs created in VR have a high potential for stimulating influence on the procedural and operational characteristics of the student's thinking, creativity, the formation of specific cognitive motivation, interest in learning and the creation of positive, harmonious mental states.

2. The developmental effect of didactic programs in VR is determined by a three-dimensional image of recognizable objects, a wide range of possibilities for performing actions with objects (animation), the presence effect, the interactivity of the situation, the implementation of visualization.

3. VR, which is used in education, works as a teaching method, tools and technologies. This is determined by the fact that VR educational programs introduce significant specificity into the activities of the teacher, student and change the content of Education, ensure the formation of a new, informational way of presenting and mastering the material, are high-tech didactic tools and act as a relatively strict algorithm of actions, guidelines that provide a guaranteed development effect.

4. It is clear that there are also negative aspects to using VR in teaching. For example, a "super-shaped", visual presentation of educational content (if incorrectly structured) can reduce the development of abstract concepts, symbolic thinking.

5. In education, virtual programs cannot completely replace teaching in educational institutions (since they ultimately represent real actions and imitation of objects in the information space), in which it is advisable to widely use them when studying the most

complex topics of various disciplines, as well as for teaching professional skills in various types of activities.

### List of used literature:

1. Khamrayev Nodir Zokir Ugli. Theoretical Analysis of Enhancing the Readiness of Teachers to use Virtual Environment in Credit Education. "Eurasian Scientific Herald". Volume 8, May, 2022. ISSN: 2795-7365. Page 51-54
2. XN Zokir o'g'li. TA'LIMDA VIRTUAL REALLIKDAN FOYDALANISH SABAB, KAMCHILIK VA USULLARI. "Elektron ta'lim", December-2021, Volume 5, №4, Bet 52-61
3. Khamrayev Nodir Zokir ugli. THE THEORETICAL ASPECT OF INCREASING THE READINESS OF HIGHER EDUCATION TEACHERS TO USE THE VIRTUAL ENVIRONMENT ASAN EXAMPLE OF CREDIT EDUCATION. International Conference on Research in Humanities, Applied Sciences and Education Hosted from Berlin, June 5<sup>th</sup> 2022. Page 87-89.
4. Khamrayev Nodir Zokir Ugli. ADVANTAGES AND DISADVANTAGES OF TECHNOLOGIES FOR CREATING ELECTRONIC TUTORIALS IN TEACHING THE TOPIC OF VIRTUAL REALITY IN HIGHER EDUCATIONAL INSTITUTIONS. Theoretical aspects in the formation of pedagogical sciences International scientific-online conference. February-2023, Page 119-122.
5. Zokir o'g'li, X. N. TA'LIMDA VIRTUAL REALLIKDAN FOYDALANISH SABAB, KAMCHILIK VA USULLARI. *TAHRIRIYAT A'ZOLARI*, 52.
6. Aliqulovich, P. S., & Zokir o'g'li, X. N. VIRTUAL REALLIK-O 'QITISH USULI VA VOSITASI SIFATIDA. *TAHRIRIYAT A'ZOLARI*, 63.
7. Khamrayev Nodir Zokir ugli. (2022). Theoretical Analysis of Enhancing the Readiness of Teachers to use Virtual Environment in Credit Education. *Eurasian Scientific Herald*, 8, 51-54. Retrieved from

- <https://geniusjournals.org/index.php/esh/article/view/1380>
8. Zokir o'g'li, X. N. TA'LIMDA VR DAN FOYDALANISH SABAB, KAMCHILIK VA USULLARI. *TAHRIRIYAT A'ZOLARI*, 52.
  9. Gayratovich, E. N., & Jovliyevich, K. B. (2023). Theory and Methodology of Software Modeling Using the Web Platform. *Eurasian Scientific Herald*, 16, 59-63.
  10. ERGASHEV, N. THE ANALYSIS OF THE USE OF CLASSES IN C++ VISUAL PROGRAMMING IN SOLVING THE SPECIALTY ISSUES OF TECHNICAL SPECIALTIES. <http://science.nuu.uz/uzmu.php>.
  11. Ergashev, N. (2023). Bulutli texnologiyalarda mavjud tahdidlar, ularga qarshi kurashish mexanizmlari va metodlari. *Electron Library Karshi EEI*, 1(01). Retrieved from <https://ojs.qmii.uz/index.php/el/article/view/273>
  12. Ergashev, N. (2022). ОЛИЙ ТАЪЛИМ ТЕХНИКА ИХТИСОСЛИКЛАРИ ЎҚУВ МАТЕРИАЛЛАРИНИ ДАСТУРИЙ ВИЗУАЛЛАШТИРИШНИНГ ИЛМИЙ НАЗАРИЙ АСОСЛАРИ.
  13. Ergashev, N. (2023). Texnika ixtisosliklari mutaxassislik masalalarini yechishda C++ visual dasturlash tilida klasslardan foydalanish tahlili. *Electron Library Karshi EEI*, 1(01). Retrieved from <https://ojs.qmii.uz/index.php/el/article/view/272>
  14. Ergashev, N. (2023). Methods of teaching parallel programming methods in higher education. *Electron Library Karshi EEI*, 1(01). Retrieved from <https://ojs.qmii.uz/index.php/el/article/view/271>
  15. Ergashev, N. (2023). Raqamli ta'lim sharoitida bulutli texnologiyalar yordamida o'qituvchilarni kasbiy faoliyatga ko'p bosqichli tayyorlashning nazariy aspektlari. *Electron Library Karshi EEI*, 1(01). Retrieved from <https://ojs.qmii.uz/index.php/el/article/view/274>